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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/576,211	05/23/2000	Katsunori Yanagida	NOK-004	2885

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EXAMINER

MERCADO, JULIAN A

ART UNIT	PAPER NUMBER
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1745

DATE MAILED: 10/22/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/576,211

Applicant(s)

YANAGIDA ET AL.

Examiner

Julian A. Mercado

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 August 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5,7-16,18-31,33-42,44-57,59-69 and 71-80 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-5,7-16,18-31,33-42,44-57,59-69 and 71-80 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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DETAILED ACTION

Remarks

This Office Action is responsive to applicant's amendment filed August 1, 2003.

Claims 6, 17, 32, 43, 58 and 70 have been canceled per applicant's amendment. Claims 1-5, 7-16, 18-31, 33-42, 44-57, 59-69 and 71-80 remain pending.

The rejection of claims 1, 2, 7-13, 18-28, 33-39, 44-54, 59-66 and 71-80 under 35 U.S.C. 103(a) based on Mabuchi et al. (U.S. Pat. 6,156,432) in view of Hamada et al. (U.S. 6,194,067 B1) has been withdrawn.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1, 2, 7-13, 18-28, 33-39, 44-54, 59-63, 65, 66 and 71-79 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mabuchi et al. (U.S. Pat. 6,156,432) in view of Kimihito et al. (JP 10-223223)

For purposes of detailed discussion, the examiner relies on a machine-translation of Kimihito et al. as obtained from the Japanese Patent Office website.
(http://www.ipdl.jpo.go.jp/homepg_e.ipdl).

As discussed in the prior Office Action, Mabuchi et al. teaches a first carbon material, e.g. graphite serving as an inner core particle having an outer surface, said outer surface being

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coated with a second carbon material such as pitch or tar, the first and second carbon material being employed in a battery negative electrode (col. 4 line 23-41, applies to independent claims 1, 12, 27, 38, 53, 65)

The claims are noted to be amended so as to recite that the second carbon material contains "at least 1 wt. % to up to 15 wt. % of boron". Applicant's amendment precludes the amount of boron shown by Hamada et al. (basis for rejection now withdrawn) insofar as a boron nitride film of the disclosed carbon material is present at 44 wt. %. (response, pg. 26) However, Kimihito et al. teaches an outer carbon material coating having boron present at 0.1 to 10 wt. %, anticipating applicant's claimed wt. % range to the extent that the wt. % of boron disclosed by Kimihito et al. overlaps therewith. (Abstract, also applies to dependent claims 7-11, 18-26, 33-37, 44-52, 59-63, 71-79) The skilled artisan would find obvious to modify Mabuchi et al.'s invention by employing boron and nitrogen for reasons such as enhancing the graphitization crystallinity of the carbon material, thereby increasing the battery's service capacity and charge/discharge efficiency. (see Kimihito et al., pars. [0016-0020]).

As to the first carbon material not containing boron or nitrogen, Kimihito et al. discloses that the added boron catalyst is not added "between the layers of a graphite crystal", thus, the inner core layers are reasonably presumed to not contain boron and nitrogen. (par. [0021], applies to dependent claims 2, 13, 28, 39, 54, 66)

Claims 3, 4, 14, 15, 29, 30, 40, 41, 55, 56, 64, 67, 68 and 80 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mabuchi et al. and Kimihito et al. as applied to claims

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1, 2, 7-13, 18-28, 33-39, 44-54, 59-63, 65, 66 and 71-79 above, and further in view of Takami et al.

The teachings of Mabuchi et al. and Kimihito et al. are discussed above.

While Mabuchi teaches that a lithium metal is employed for the positive electrode (col. 7 line 9 et seq. under Example 1), Mabuchi does not explicitly teach this metal to be a lithium metal oxide. (as required by dependent claims 64 and 80) However, Takami et al. teaches oxides of lithium metals for the positive electrode. (col. 11 line 533-42, applies to dependent claims 64, 80) Thus, the skilled artisan would find obvious to employ a lithium metal oxide in the positive electrode as such material has the desired high electrode potential to result in the battery having a long cycle life, high charge/discharge characteristics, high voltage and high energy density.

As to dependent claims 3, 4, 14, 15, 29, 30, 40, 41, 55, 56, 67, and 68, Mabuchi et al. does not explicitly teach the first carbon material to have the instant 3.35 \AA to 3.38 \AA spacing d_{002} between (002) planes and at least 300 \AA or 1000 \AA in the size L_c of crystallites in the c-axis direction. However, Kimihito et al. teaches a spacing of 3.37 \AA (equivalent to 0.337 nm) and a size L_c of 40 nm (equivalent to 400 \AA). (par. [0017]) Additionally, Takami et al. teaches that this spacing is desired as the theoretical capacity of graphite, i.e. carbon material, and that the size L_c is desired to be infinitely large. Thus, the skilled artisan would have found obvious to employ the instant spacings in Mabuchi et al.'s invention for reasons such as achieving optimal electrical capacity for the carbon material.

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Claims 5, 16, 31, 42, 57 and 69 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mabuchi et al. and Hamada et al. applied to claims 1, 2, 7-13, 18-28, 33-39, 44-54, 59-63, 65, 66 and 71-79 above, and further in view of Tamaki et al.

As to dependent claims 5, 16, 31, 42, 57 and 69, Mabuchi et al. does not explicitly teach the second carbon material to have the instant 3.37 Å to 3.90 Å spacing d_{002} between (002) planes. However, as discussed above in Kimihito et al. the spacings are 3.37 Å and a size L_c of 400 Å., while Tamaki et al. teaches that for a carbon material containing boron it is desired to have the instant spacings. (col. 4 line 18 et seq.) Thus, the skilled artisan would have found obvious to employ the instant spacings in Mabuchi et al.'s invention for reasons such as increasing the charge and discharge capacities of the electrode material.

Response to Arguments

Applicant's arguments directed against Hamada et al. have been considered but are moot in view of the new ground(s) of rejection.

Arguments against Takami et al. and Tamaki et al. appear to be directed to each of these references failing to remedy alleged differences between Mabuchi et al. and the presently amended claims. However, Mabuchi et al. is maintained for the reasons discussed of record and above and now in view of Kimihito et al. Mabuchi et al. in view of Kimihito et al. are considered to preclude any of applicant's alleged differences from the presently claimed invention.

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Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

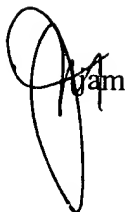
A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Julian A. Mercado whose telephone number is (703) 305-0511. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan, can be reached on (703) 308-2383. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.


Patrick J. Ryan
Supervisory Patent Examiner
Technical Center


Julian A. Mercado